

# Community for Data Integration FY18 RFP Lightning Presentations

February 6, 2018

Ask questions on [slido.com](https://www.slido.com), #X615

# **(A) 4D automated coastal slope failure characterization tool in support of coastal landslide hazard assessments**

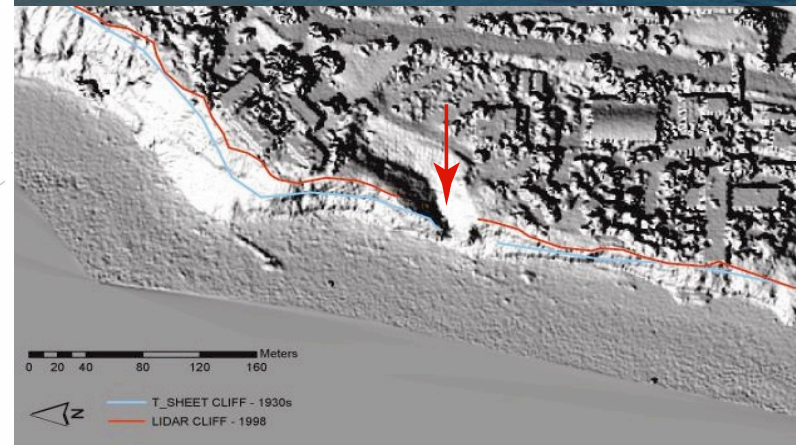
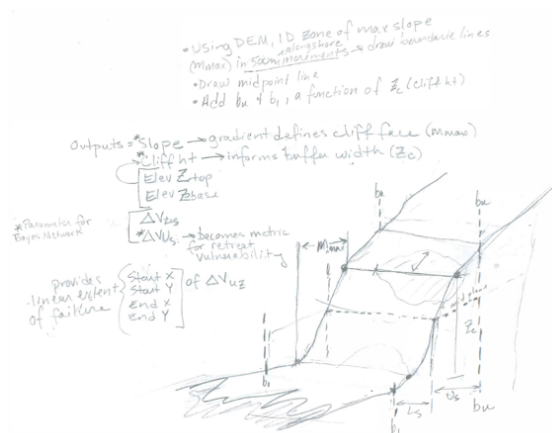
Hapke, Cheryl

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## 4D Automated Coastal Slope Failure Characterization Tool in Support of Coastal Landslide Hazard Assessments

Cheryl Hapke  
(chapke@usgs.gov)

- Seacliff retreat and coastal landslides are significant hazards along higher relief coasts (CA, PacNW, AK, Great Lakes)
- We are beginning to develop a coastal landslide vulnerability forecast model
- Requirements include metrics of seacliff retreat locations and amounts, and geomorphology
- Traditional methods of seacliff retreat measurement use 2D metrics (i.e. cliff edge positions), primarily manually derived
- 3D datasets are now widely available (lidar, SfM)
- Need is development of an automated approach that utilizes the full value of 3D data and provides more information on cliff change processes over time



# **(B) Mapping land-use, hazard vulnerability and habitat suitability using deep neural networks**

Warrick, Jonathan

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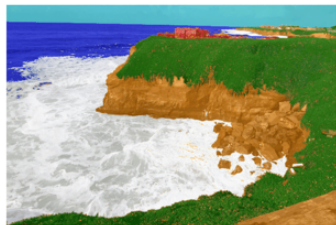
## CDI 2018 Statement of Interest

# Mapping land-use, hazard vulnerability and habitat suitability using deep neural networks (DNNs)

**Jonathan A. Warrick**

USGS Pacific Coastal and Marine Science Center  
Santa Cruz, CA

jwarrick@usgs.gov



### Automated Semantic Maps of:

- Landforms/Sediment/Geology
- Water (calm/rough)
- Ground cover/vegetation
- Specific physical habitats
- You name it...

- *Oblique or aerial photographs, satellite imagery, orthomosaics*
- *Non-photographic imagery (e.g. sonar, radar)*
- *SfM/lidar Workflows*
- *3D/4D Geospatial Analyses*
- *New and legacy data*

### Objective:

- Develop classification/mapping workflow for multiple uses:
- Habitat suitability / biotopes
  - Habitat fragmentation
  - Hazard Vulnerability
  - Resource management

More examples: <https://www.danielbuscombe.com/dcn-image-classification/>

# **(C) Multiple hazard and vulnerability data integration and visualization for investigation of cross-border social and economic issues**

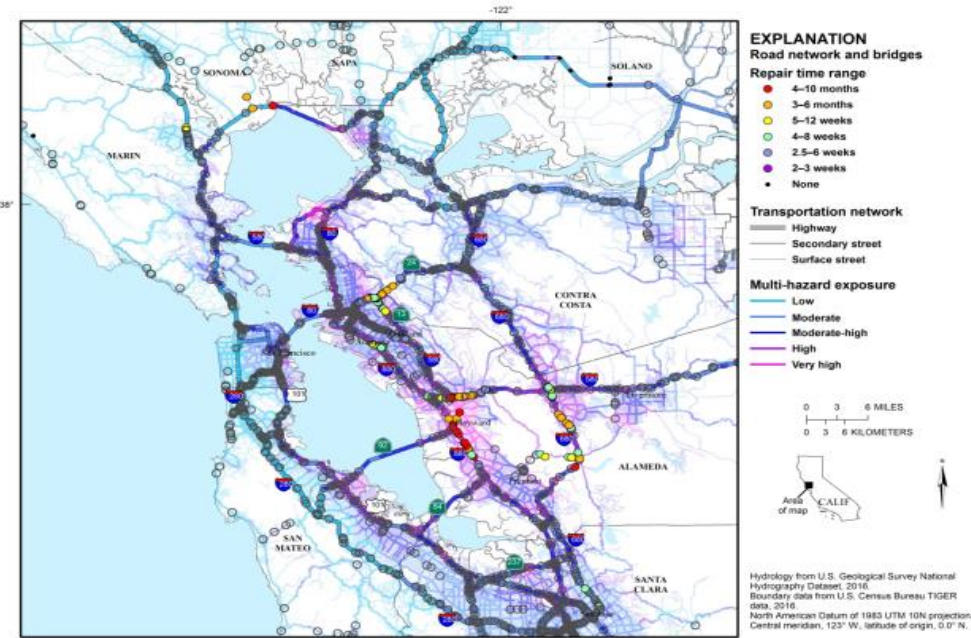
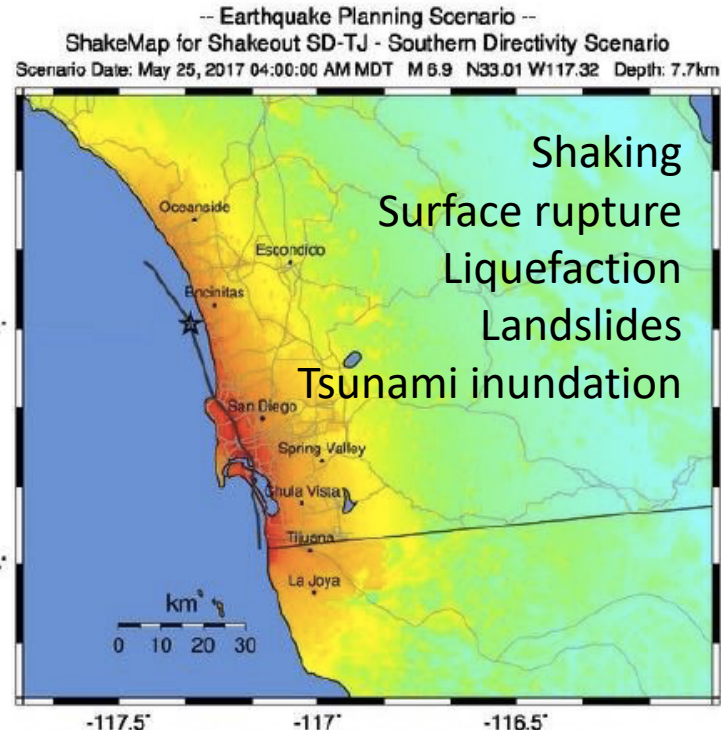
Wein, Anne

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# Multiple hazard & vulnerability data integration & visualization for investigation of cross-border social & economic issues



Anne Wein  
aweing@usgs.gov



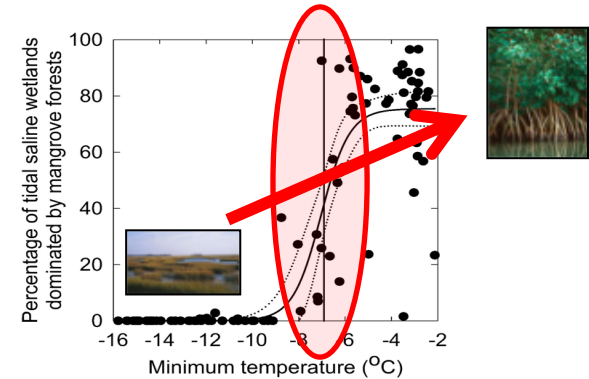
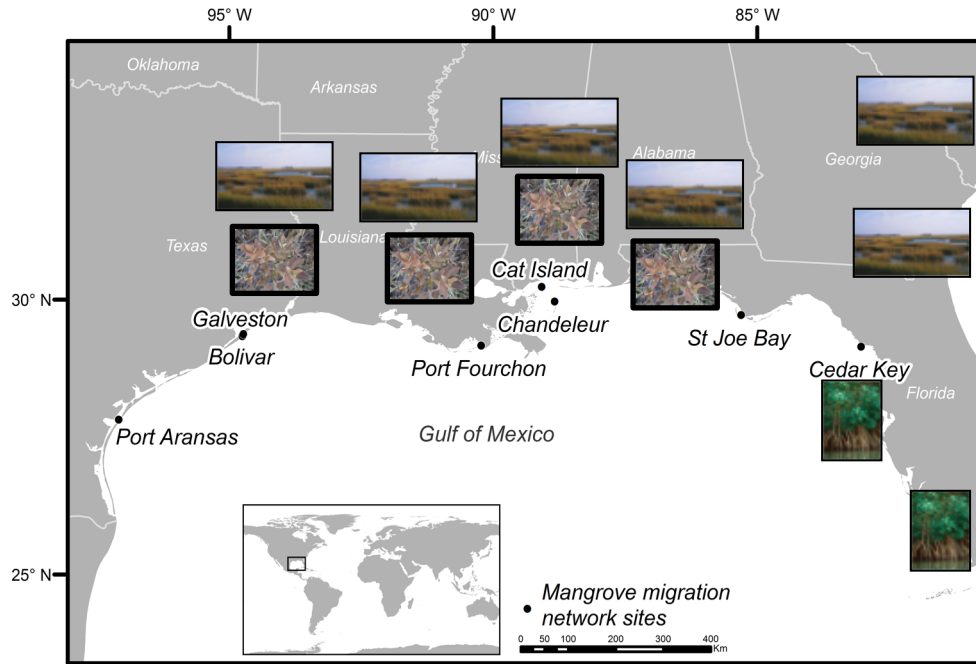
# **(D) Mangroves vs. salt marshes: integrating data from a community of practice to assess vulnerability of coastal wetlands to winter temperature extremes**

Osland, Michael

Ask questions on [slido.com](https://www.slido.com), #X615



**Title: Mangroves vs. salt marshes: integrating data from a community of practice to assess vulnerability of coastal wetlands to winter temperature extremes (Mike Osland: [mosland@usgs.gov](mailto:mosland@usgs.gov))**



# (E) Knowledge Extraction Algorithms (KEA): Turning Literature Into Data

Neilson, Matthew

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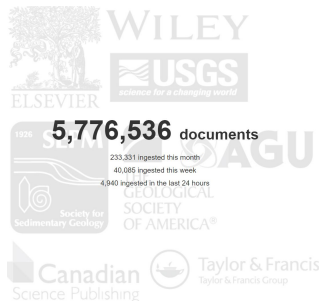
# Knowledge Extraction Algorithm (KEA): Turning Literature Into Data

Literature Review



[http://evokey.com/intro/?view\\_image\\_bly=review+of+literature.jpg](http://evokey.com/intro/?view_image_bly=review+of+literature.jpg)

Literature  
[GeoDeepDive](#)



KEA: Machine Learning  
and Text Mining



Train / Validate Models

Actionable Database

Doc_ID	Species	Waterbody	Latitude	Longitude	MicroCitation
1023-wf24 5-3234	Dreissena polymorpha	Crystal Lake	43.2621	-84.9318	Zebra mussels were found in Crystal Lake, Michigan...
1234-ldf24- 3452	Dreossema polymorpha	Lake Pueblo	38.2664	-104.7446	Lake Pueblo tested positive for zebra mussel



Contact: Matt Neilson [mneilson@usgs.gov](mailto:mneilson@usgs.gov)





# **(F) A regional, interactive web-based application to integrate ecological and risk assessment data**

Letcher, Benjamin

Ask questions on [slido.com](https://www.slido.com), #X615

# A regional, interactive web-based application to integrate ecological and risk assessment data, Ben Letcher, bletcher@usgs.gov

Interactive visualization tools for complex spatial data

Culvert risk of failure

Emergency services, transportation disruption, ecological disruption

Existing regional database

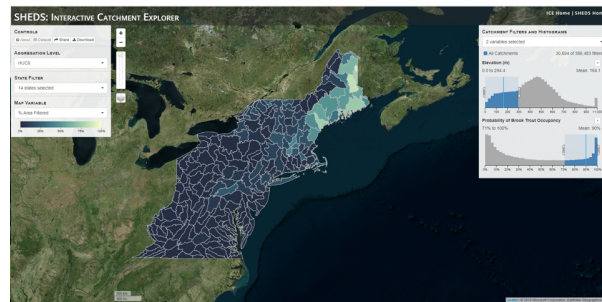
Propose to combine applications

Regional risk of failure

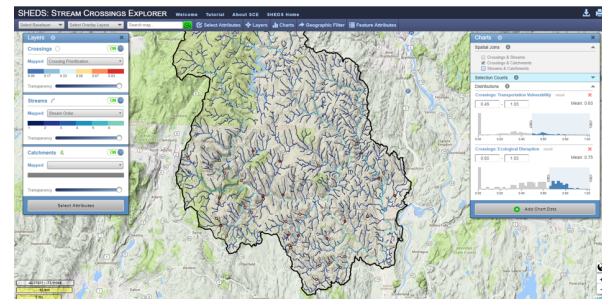
Scalable, generalizable

Regional (ME to VA)  
Zoom, Aggregate, Filter  
Polygons only

ice.ecosheds.org



sce.ecosheds.org



# **(G) Workflows to support integrated predictive science capacity: Forecasting invasive species for natural resource planning and risk assessment**

Weltzin, Jake

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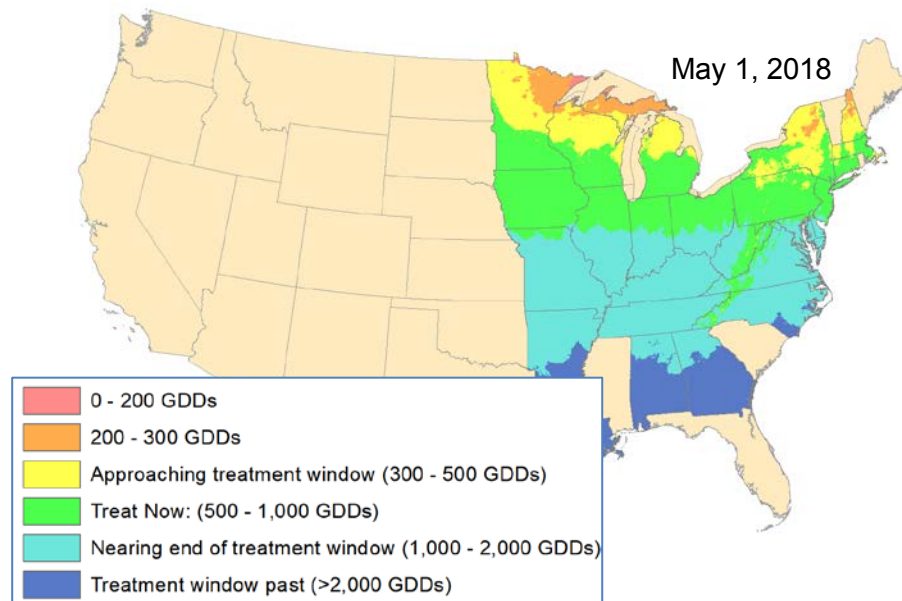
# Workflows to support integrated predictive science capacity: Forecasting invasive species for natural resource planning and risk assessment

## Goals:

- Produce real-time and short-term forecasts of invasive & pest plant and animal activity
- Deliver products to natural resource managers
- Develop best practices for communication
- Document and share workflow and best practices for reproducibility

## Target species for 2018:

- emerald ash borer
- apple maggot
- winter moth
- hemlock wooly adelgid
- lilac/ash borer
- Canada thistle



Jake Weltzin, [jweltzin@usgs.gov](mailto:jweltzin@usgs.gov)

# (H) Assessing and Disseminating Cascading Hazards Information

Gomberg, Joan

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# Assessing and Disseminating Cascading Hazards Information

## Land-level Change Scenarios



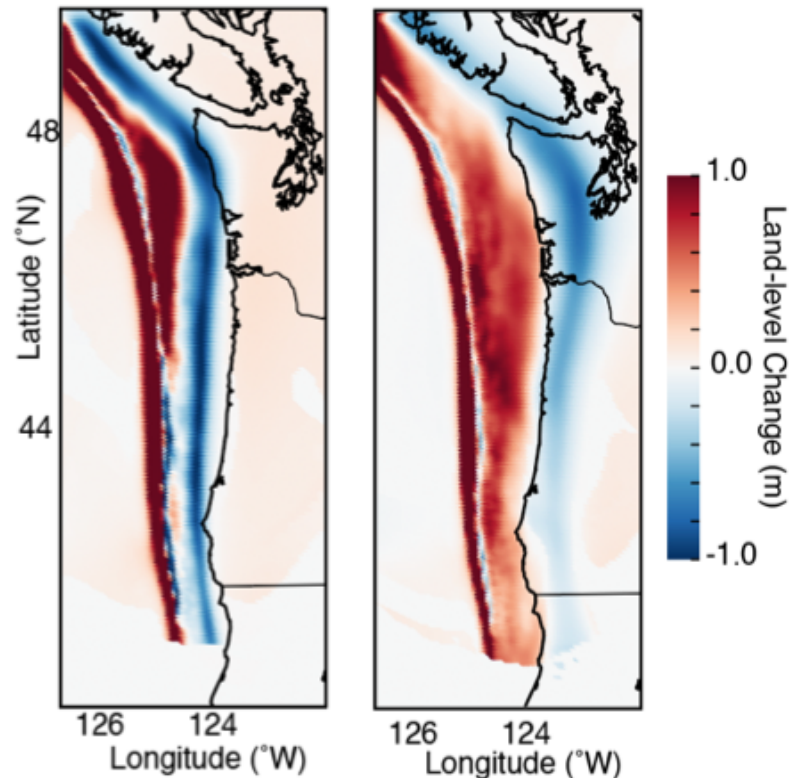
POST-QUAKE



*Altered river flow  
impacts transport*



PRE-QUAKE



# (I) Delivery of Landsat waterfowl food resource time series maps for drought management in Central Valley wildlife refuges

Byrd, Kristin

Ask questions on [slido.com](https://www.slido.com), #X615



# Delivery of Landsat migratory waterfowl food resource time series maps for drought management in Central Valley wildlife refuges

Kristin Byrd, Ph.D. (kbyrd@usgs.gov) and Cynthia Wallace, Ph.D. (cwallace@usgs.gov),  
Western Geographic Science Center, Menlo Park, CA



Waterfowl – ducks, geese and swans

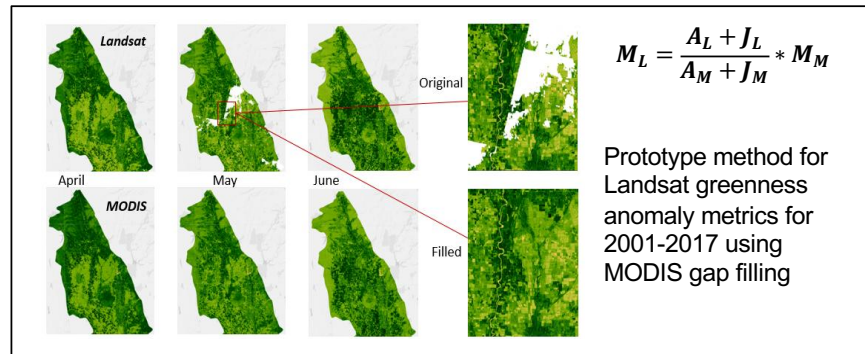


Waterfowl food resources  
produced in Central Valley  
managed wetlands



## Field Data

>250 field plots from 4 USFWS  
NWR and 3 State Wildlife Areas



**Algorithms in R, Google Earth Engine**

***Landsat-based time series maps of waterfowl  
food resource coverage and relative productivity,  
delivered to managers.***

# (J) Content specifications to enable USGS transition to ISO metadata standard

Walworth, Dennis

Ask questions on [slido.com](https://www.slido.com), #X615

# Content Specifications to Enable USGS Transition to the ISO Metadata Standard

- ISO is the new standard in town
- ISO: Flexible, but no constraints
- Define USGS Content Specifications
- Easier for metadata authors
- Robust, complete and relevant metadata
- Convene workshop to define USGS Specs

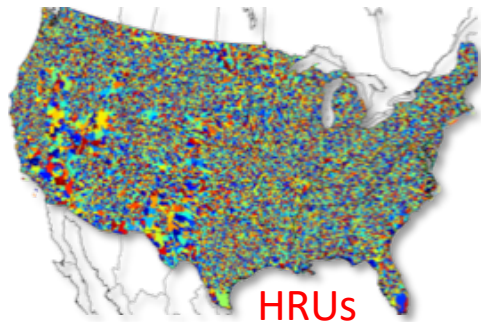
Dennis Walworth ([dwalworth@usgs.gov](mailto:dwalworth@usgs.gov)), Fran Lightsom ([flightsom@usgs.gov](mailto:flightsom@usgs.gov))

# **(K) Developing an integrated predictive forecasting capacity for risk and hazard assessment from local to national scales utilizing the USGS National Hydrologic Model**

Hay, Lauren

Ask questions on [slido.com](https://www.slido.com), #X615

# Developing an integrated predictive forecasting capacity for risk and hazard assessment from local to national scales utilizing the USGS National Hydrologic Model (NHM)

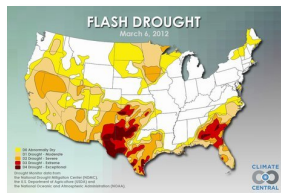


## Ensemble Forecasting (EF) techniques applied to the NHM

- 109,951 Hydrologic Response Units (HRUs)
- 56,460 stream segments (SEGs)

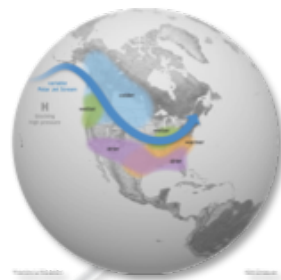


NHM-PRMS run in EF mode for CONUS → produce 90 day forecasts on the first day of every month for the historic record for water budget components and stream temperature forecasts.



## Forecasts will be analyzed for

- accuracy
- conditioning by atmospheric and sea-surface teleconnections
- ability to predict historic identified risks and hazard events



# (L) Herbarium Specimen Inventory and Archive

McCoy, John

Ask questions on [slido.com](https://www.slido.com), #X615



# Herbarium Specimen Inventory and Archive

John W. McCoy and Larry Allain

[mccoyj@usgs.gov](mailto:mccoyj@usgs.gov)



Field  
Collection



Data  
associated  
with  
specimens.

Plant  
Name

Collected  
By

Date  
collected

Location

Notes and  
Comments

**DATABASE**

Unique ID

Name *Lamium amplexicaule*

Date collected:

Location:

Collector: Larry Allain



**Associated Databases**



Identify plant species  
for collection,  
photographs and  
observation.



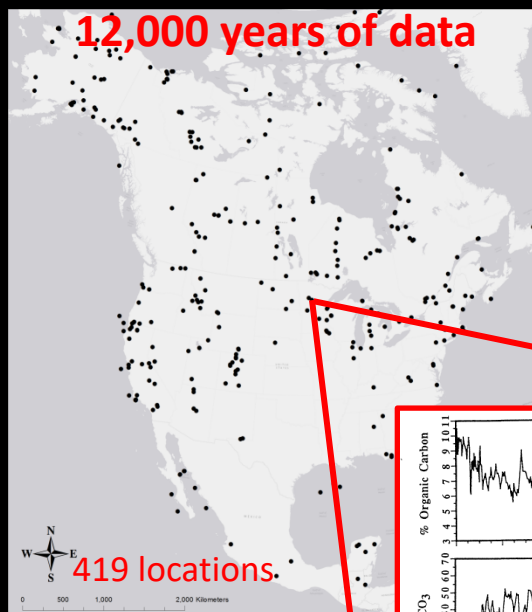


# **(M) Integrating and visualizing multiproxy time series data to enhance data organization and accessibility for USGS researchers and increase USGS data access for public use**

Rodysill, Jessica

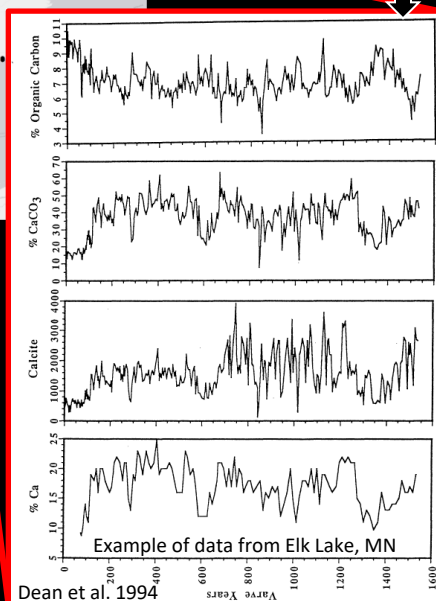
Ask questions on [slido.com](https://www.slido.com), #X615

# Integrating and visualizing multiproxy time series data to enhance data organization and accessibility for USGS researchers and increase USGS data access for public use



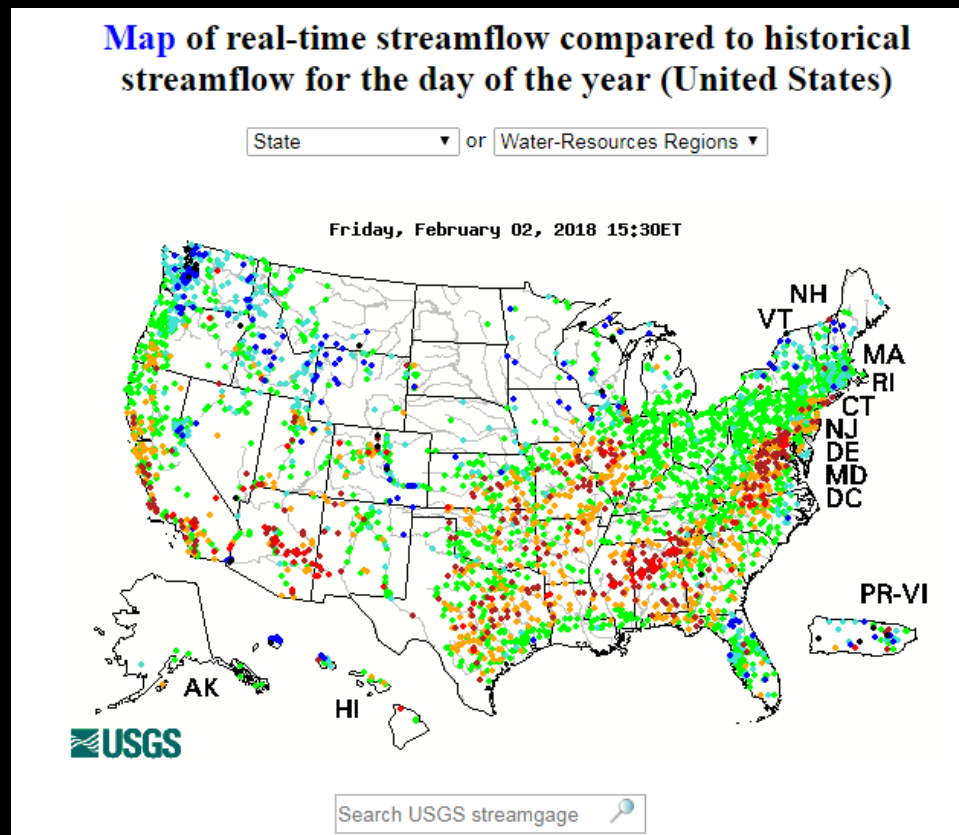
**USGS &  
Public use**

**Time series example  
from one location**



**Data storage &  
preservation**

**Data extraction**



**Map output similar to USGS WaterWatch (above)  
....but for the past**

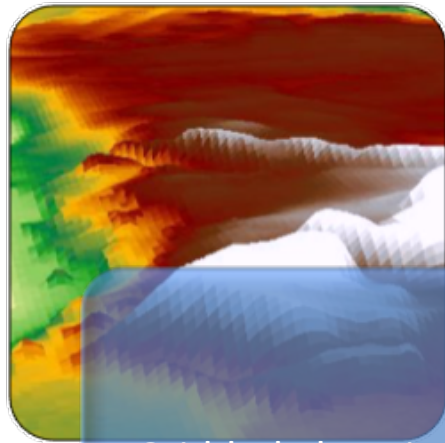
# (N) Floodplain Modeling, Analysis, and Mapping

Schalk, Luther

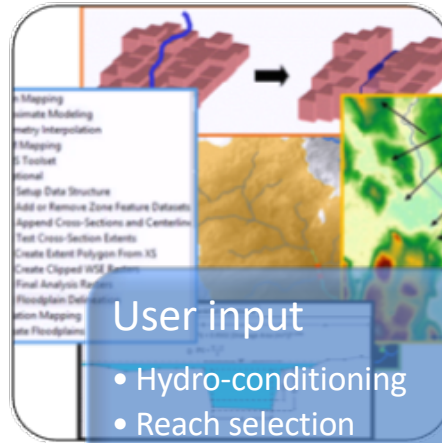
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# Floodplain Modeling, Analysis, and Mapping

Luther Schalk, [Ischalk@usgs.gov](mailto:Ischalk@usgs.gov)

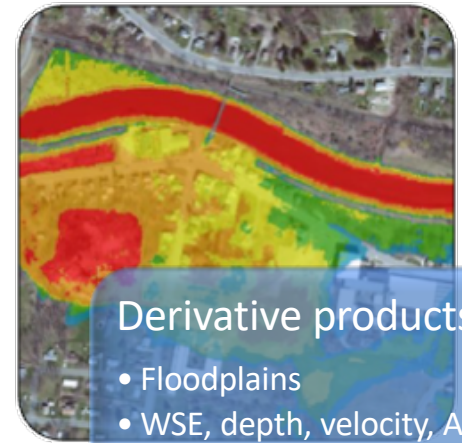


Gridded elevation model



## User input

- Hydro-conditioning
- Reach selection
- Hydrologic model
- Cross-sections
- Geometric & hydraulic properties
- Hydraulic model



## Derivative products

- Floodplains
- WSE, depth, velocity, AEP grids
- Comparison vs. effective
- Other hazard analyses
- Program-specific schema

# (O) ICE! Ice Jam Hazard Mobile-Enabled Website

Chase, Katherine

Ask questions on [slido.com](https://www.slido.com), #X615

# ICE! Ice Jam Hazard Mobile-Enabled Website

- Ice jams MAJOR HAZARD
- Vulnerable sites
- Existing USGS website
- USACE database
- NWS, Montana, Nebraska
- Katherine J. Chase, Hans Vraga, Tonia Roddick

[kchase@usgs.gov](mailto:kchase@usgs.gov), [hvraga@usgs.gov](mailto:hvraga@usgs.gov), [troddick@usgs.gov](mailto:troddick@usgs.gov)



# (P) Creation of a web-application for distributing unarchived fires

Picotte, Joshua

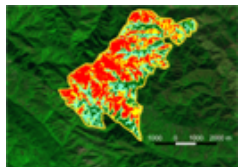
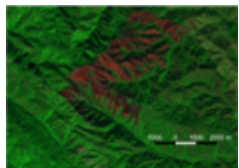
Ask questions on [slido.com](https://www.slido.com), #X615



# Creation of a web-application for distributing unarchived fires

Joshua Picotte ASRC Federal InuTeq LLC, Contractor to the U.S. Geological Survey (USGS), Earth Resources Observation and Science (EROS) Center, Contract Number G13PC00028

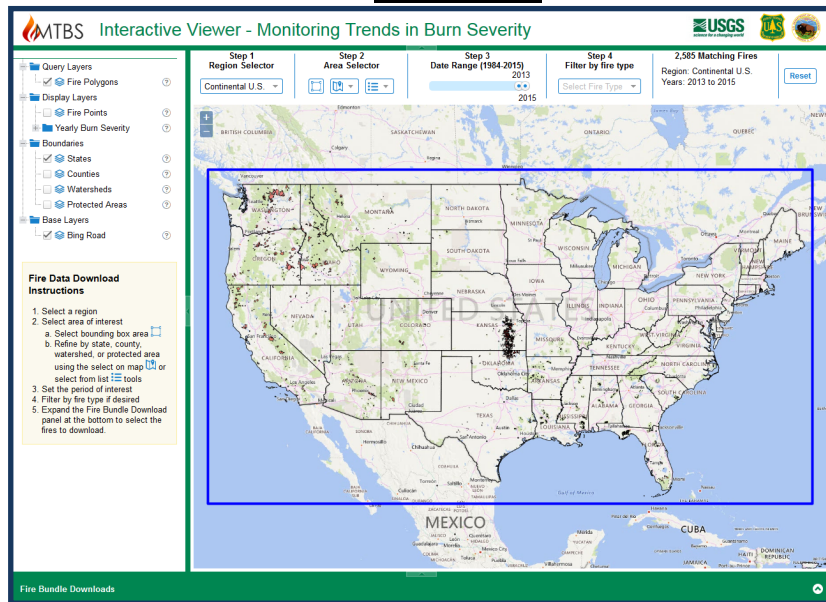
## 1. Bundle



## 2. Database



## 3. Serve



# (Q) Training a Google Earth Engine land cover classification with ground reference data from USGS Projects

Aneece, Itiya

Ask questions on [slido.com](https://www.slido.com), #X615

# Training a Google Earth Engine land cover classification with samples from USGS projects

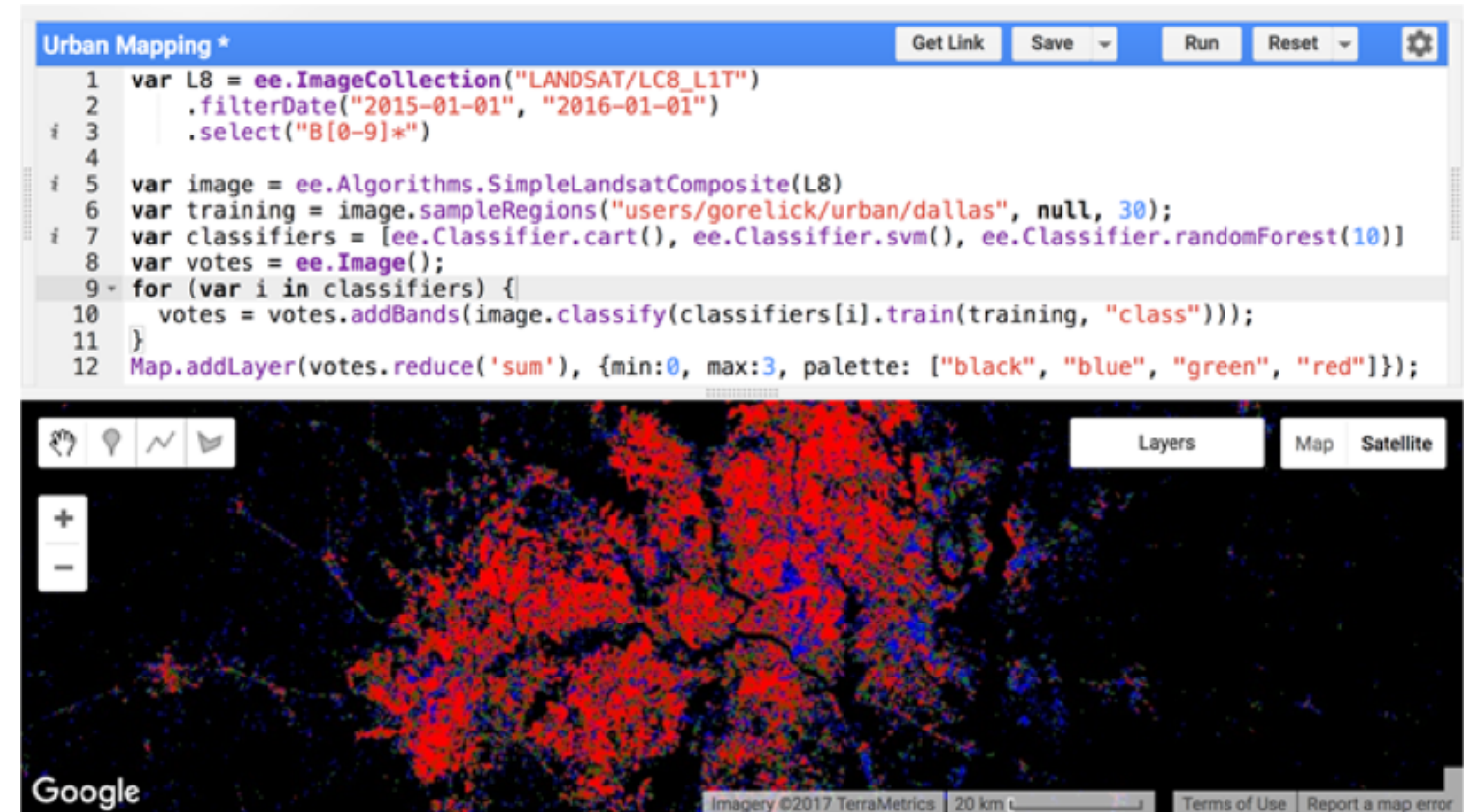
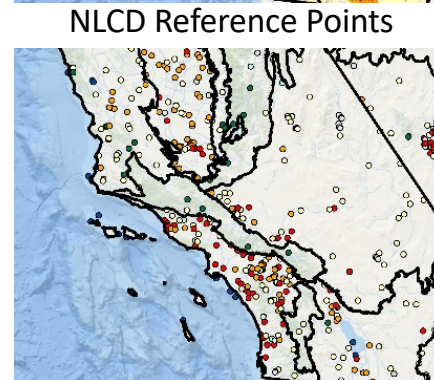
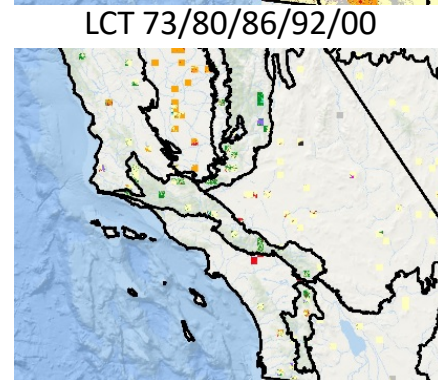
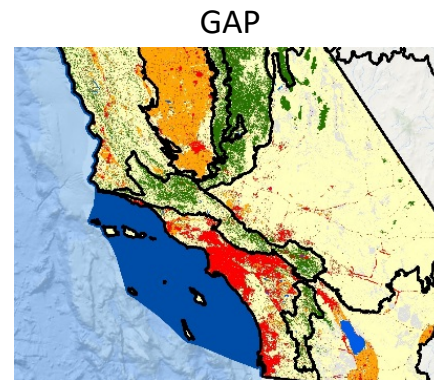
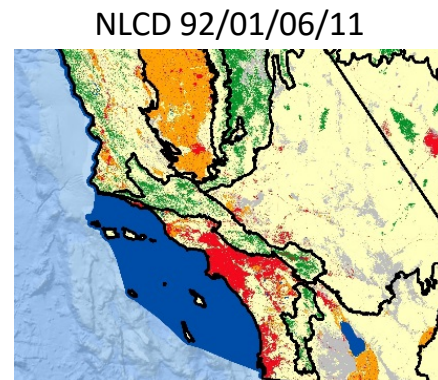
Itiya Aneece (ianeece@usgs.gov), Jess Walker (jjwalker@usgs.gov), Chris Soulard (csoulard@usgs.gov)

Western Geographic Science Center

USGS LULC/Ground Reference  
Data to Use as Training Data

Upload training points  
or polygons into  
Google Earth Engine

Supervised classification in GEE



\*Screenshot from Supervised Classification presentation by Noel Gorelick, GEE

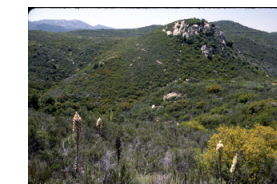
- No data
- Water
- Developed
- Disturbed
- Barren (naturally)
- Forest
- Grassland/Shrubland
- Agriculture
- Wetlands
- Perennial snow/ice



Grassland



Barren



Shrubland



Urban

\*Photos from LCT Photo Map

# (R) Facilitating USGS data integration into Google Earth Engine for geospatial analysis

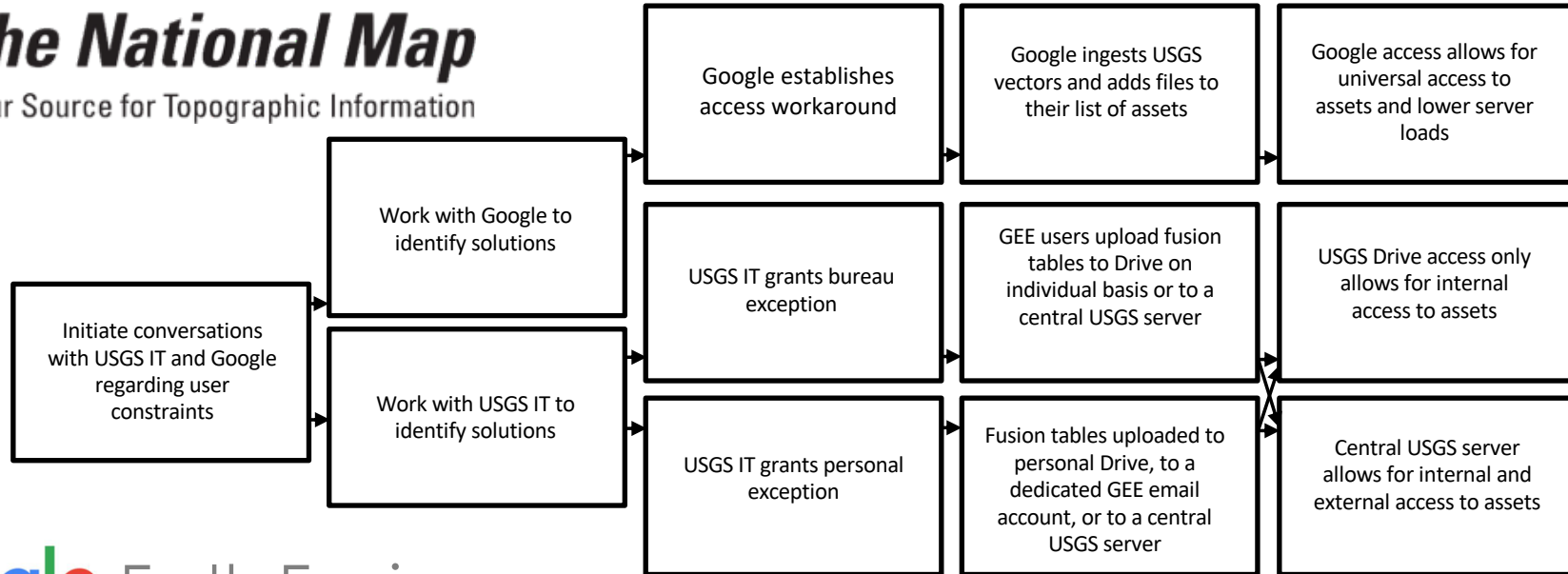
Walker, Jessica

Ask questions on [slido.com](https://www.slido.com), #X615



# Facilitating USGS data integration into Google Earth Engine for geospatial analysis

Jessica Walker (jjwalker@usgs.gov), Itiya Aneece (ianeece@usgs.gov), Christopher Soulard (csoulard@usgs.gov)  
Western Geographic Science Center



Google Earth Engine



# (S) An Interactive Web-based Tool for Anticipating Long-term Drought Risk

Bradford, John

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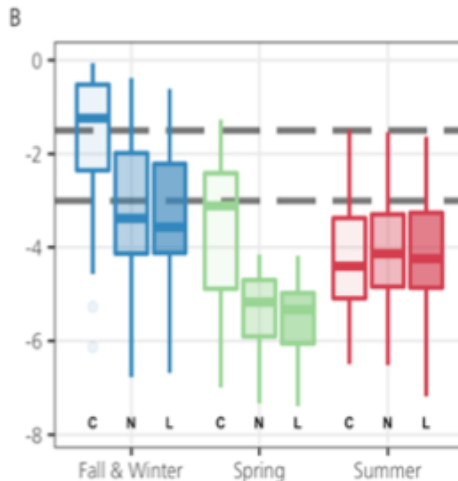
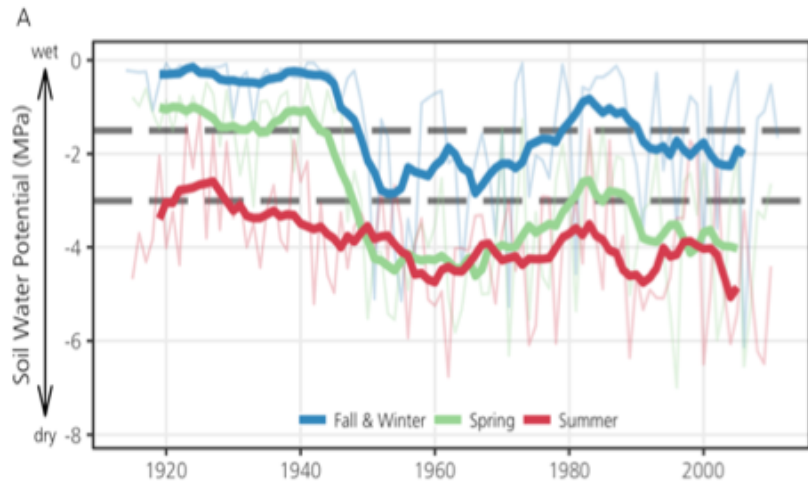


# An Interactive Web-based Tool for Anticipating Long-term Drought Risk

**Need:** Drought risk is expected to increase in coming decades, but no tool exists to predict and understand site-specific risk of future drought.

## Process:

1. Utilize Rshiny and AmazonS3 to create a user-friendly, interactive, online front-end for
2. SOILWAT2, a proven, existing model of ecosystem water balance.



## Deliverables:

Site-specific *data*, *metadata* and synthesized quantifications and visualizations of:

- A. long-term historical moisture patterns
- B. predicted Near and Late century moisture

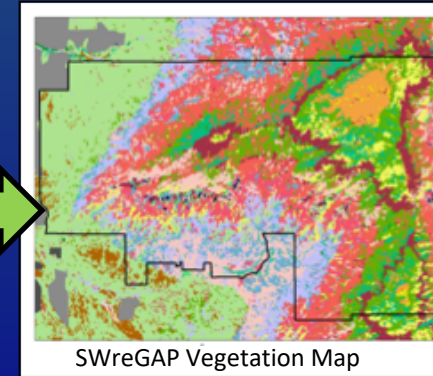
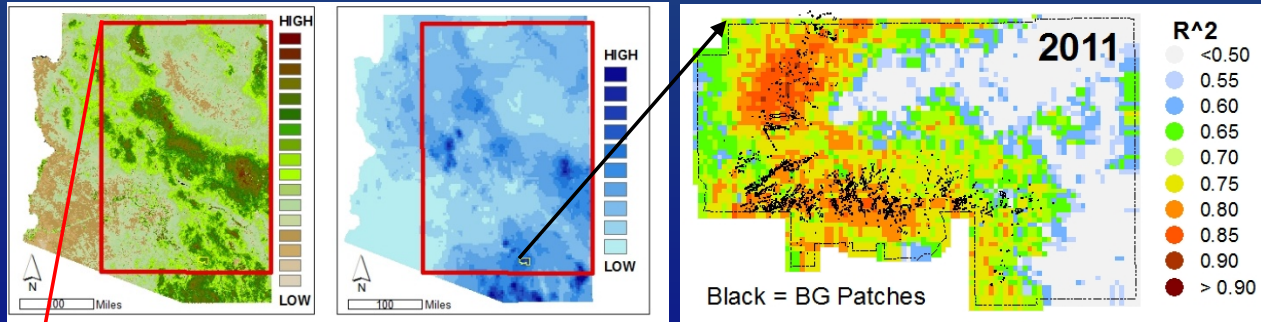
# **(T) Tools based on Regional Climate-Landscape Response (CLaRe) metrics for invasive species and fire fuels hazards management**

Wallace, Cynthia

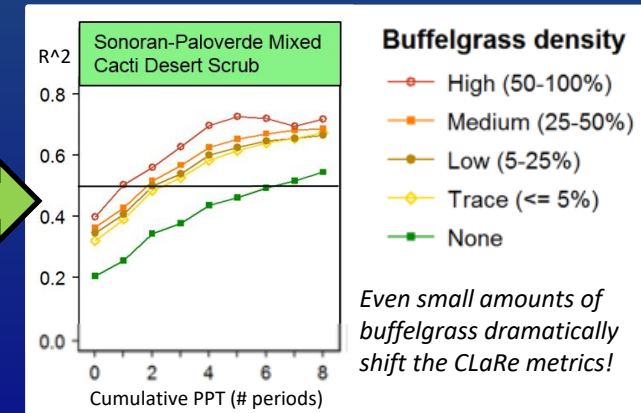
Ask questions on [slido.com](https://www.slido.com), #X615

# Tools based on **Climate-Landscape Response (CLaRe)** for invasive species and fuels hazards

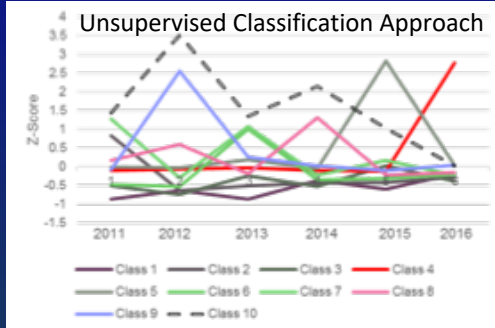
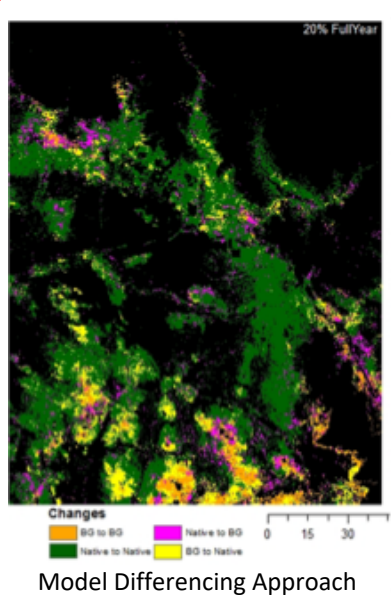
Cynthia Wallace: cwallace@usgs.gov



Within Vegetation

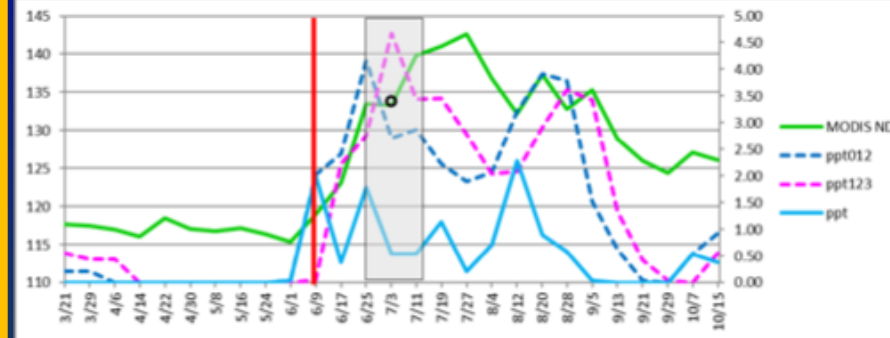


## 1. NASCENT POPULATIONS



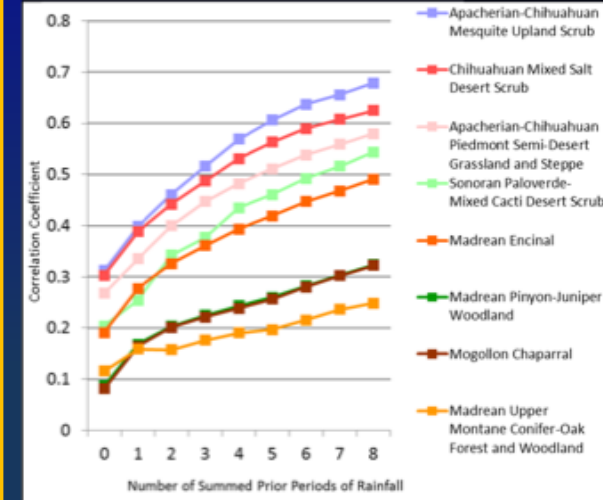
- Map Regionally
- Field validation
- Isolate seasons
- Explore various invasives dynamics

## 2. OPTIMIZE TREATMENT



- Map Regionally, including:
- NDVI, NDVI Slope, Cumulative prior PPT
- Calibrate to management landscape
- Intersection of areas PREDICTED to turn green and OBSERVED to be green

## 3. FOREST FUELS



- Isolate Forest AOI
- Explore/Exploit Rooting Depth Stratification

# (U) Validation of High Level Remote Sensing Products in Support of Essential Climate Variables

Saleh, Raad

Ask questions on [slido.com](https://www.slido.com), #X615

# Validation of High Level Remote Sensing Products in Support of Essential Climate Variables

Raad Saleh, [rsaleh@usgs.gov](mailto:rsaleh@usgs.gov)

**Background:** High Level Remote Sensing (HL-RS) products, such as Surface Reflectance (SR) and Surface Temperature (ST) are generated using current and archived satellite data spanning over several decades. HL-RS products are building block in the Essential Climate Variables (ECVs) produced by EROS. These are global 30 meter land cover; burned area (surrogate for fire disturbance); dynamic surface water extent (proxy for lake variables); and snow covered area (a component of snow and ice cover).

**Issue:** ECVs support monitoring, analysis, and predictive modeling of vast number of applications related to risk assessment and hazard-exposure that affect people, land, and nature. The quality of the HL-RS products, and in turn the ECVs, affect the validity and accuracy of the risk assessment and quantifying the hazard-exposure. The specific issue we are addressing is currently quality assurance of HL-RS does not include validation of the resulting reflectance values based on comparison with the corresponding physical data. A very important HL-RS product can be rendered worthless if no validation protocols are included to ensure accuracy of the derived values, hence affecting the dependent ECVs.

**Solution:** Establish validation protocols to be embedded in production pipeline, and then report the validation outcome into the associated metadata as a quality assurance. The goal is to ensure the measured SR is the best possible representative of the physical feature on the surface.

**Technical Approach:** Comparing calculated SR to known, controlled independent measurements, then quantifying the difference, then reporting results as part of associated metadata. We will evaluate vicarious, multi-sensor, as well as comparing to pseudo-invariant sites.

**Team:** EROS/USGS, South Dakota State University, and Committee on Earth Observation Satellites

**Deliverables:** 1) Best practices document, 2) Technical methodology, 3) Educational activities and 4) a USGS Open-File Report.

**Cost:** Requested Funding \$43,249. Matching Funding \$26,336.

**Durations:** 6 Months



# (V) Reproducible and Executable Workflows for Digitization, Discovery, and Use of Physical Samples

Latysh, Natalie

Ask questions on [slido.com](https://www.slido.com), #X615



# Latysh & Motz – 2018 CDI SOI: Reproducible and Executable Workflows for Digitization, Discovery, and Use of Physical Samples

## Sample acquisition and management



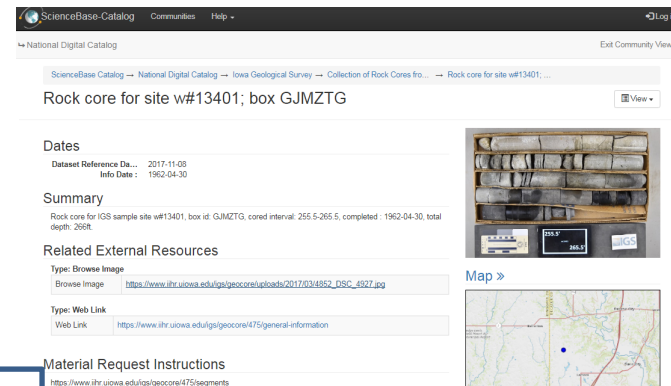
- Photography set up
- Type of camera
- Scanning resolution
- Collection management and policies
- Environmental controls
- Databases

## Digital capture



- Metadata standards
- Describing physical samples
- Creating web services
- Managing digital files

## Data management, discovery, use

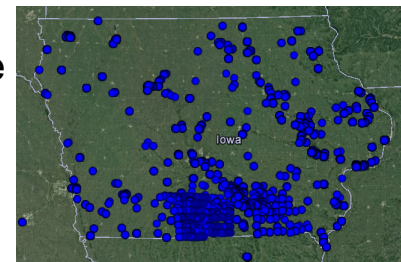


How do I do any of this?

Jupyter Notebook workflows!



KML service showing rock core localities



# **(W) Developing a Playbook to Operationalize Crowdsourcing for Emergency Management (EM) through the Standardization of Data, Tools, and Procedures**

Liu, Sophia B

Ask questions on [slido.com](https://www.slido.com), #X615

# Developing a Playbook to Operationalize Crowdsourcing for Emergency Management through the Standardization of Data, Tools, and Procedures

Sophia B Liu - Innovation Specialist @ Science and Decisions Center (sophialiu@usgs.gov)



## Conduct Gap Analysis

Identify key data points, data standards, tools, and standard operating procedures commonly used for all hazards and disaster phases by the Whole Community.



## Organize In-Person & Online Forums

Discuss findings from the gap analysis and develop solutions for standardizing the data, tools, and procedures for crowdsourcing in emergency management.



## Develop a Playbook

Incorporate outputs from forums & related initiatives to produce guidance on standardizing the curation and integration of crowdsourced data, tools, & procedures.



## Iteratively Test & Improve Playbook

Test playbook to evaluate the utility and fidelity of the crowdsourcing standards at exercises, meetings, and hackathons to implement during 2018 hurricane season.



# **(X) Creating a wildfire risk prediction tool for public resource managers using antecedent precipitation**

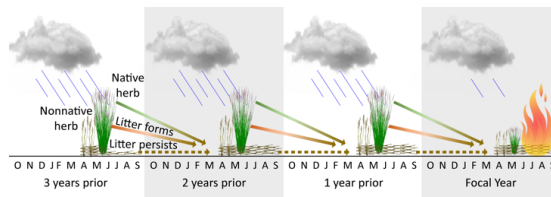
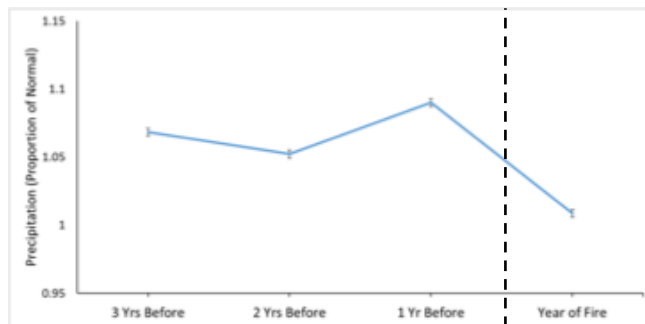
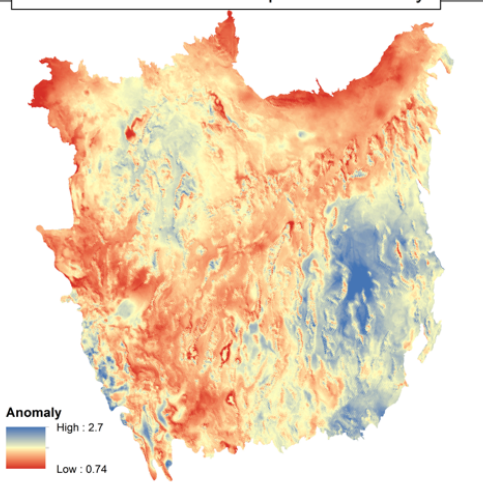
Pilliod, David

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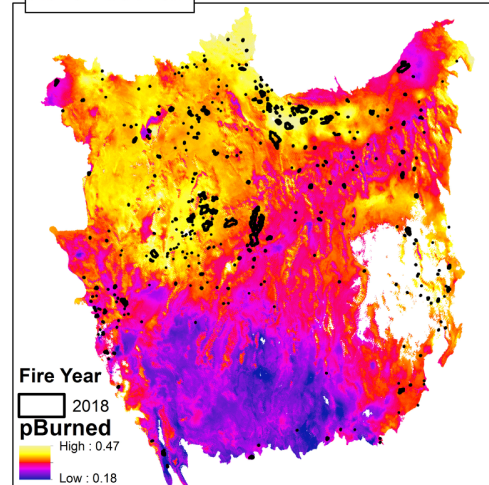
# Creating a Wildfire Risk Prediction Tool for Public Resource Managers Using Antecedent Precipitation

A new tool for fuel treatment and fire risk planning

October - June 2018 Precipitation Anomaly



2018 Fire Risk



Plan ahead for an upcoming fire season

# (Y) SfM / Photogrammetry Processing Pipeline on USGS HPC

Adams, Joe

Ask questions on [slido.com](https://www.slido.com), #X615





# CDI SOI - Photogrammetry Processing Pipeline on USGS HPC

Joe Adams – jdadams@usgs.gov

Cloud Vendors are not  
FedRAMP Compliant

Indiana University – Gary Motz  
Photogrammetry Processing Network



EROS  
Data  
Sharing  
Portal

**Legend**  
Bicycle Lake Army Airfield

Point cloud from low-altitude aerial imagery from unmanned aerial system (UAS) flights over Coast Guard Beach, Nauset Spit, Nauset Inlet, and Nauset Marsh, Cape Cod National Seashore, Eastham, Massachusetts on 1 March 2016 (LAZ file)

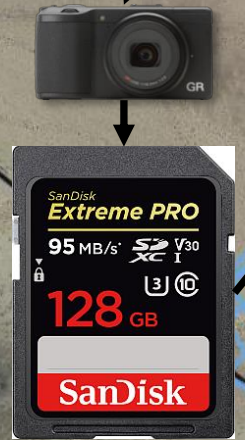
Dates  
Publication Date: 2017  
File Period: 2016-03-01

Citation  
Howard, G.A., 2017. Point cloud from low-altitude aerial imagery from unmanned aerial system (UAS) flights over Coast Guard Beach, Nauset Spit, Nauset Inlet, and Nauset Marsh, Cape Cod National Seashore, Eastham, Massachusetts on 1 March 2016 (LAZ file). U.S. Geological Survey Data Store. <https://data.usgs.gov/dataset/point-cloud-from-low-altitude-aerial-imagery-from-unmanned-aerial-system-uas-flights-over-coast-guard-beach-nauset-spit-nauset-inlet-and-nauset-marsh-cape-cod-national-seashore-eastham-massachusetts-on-1-march-2016-laz-file>

Summary  
This point cloud was generated from low-altitude aerial imagery collected from an unmanned aerial system (UAS) flown over the Cape Cod National Seashore on 1 March 2016. The objective of the project was to evaluate the ability of low-altitude aerial imagery to provide a detailed view of the coastal landscape and to provide a 3D view of the landscape. The point cloud was generated from the imagery using a photogrammetry software package. The point cloud was generated in a LAS file format and is available for download from the USGS Data Store. The point cloud was generated using a photogrammetry software package. The point cloud was generated in a LAS file format and is available for download from the USGS Data Store.

Map 3  
A map showing the location of the study area, Cape Cod National Seashore, Eastham, Massachusetts. The map includes a scale bar and a north arrow.

Contacts  
Contact: jdadams@usgs.gov



30,000 Images  
770GBs data

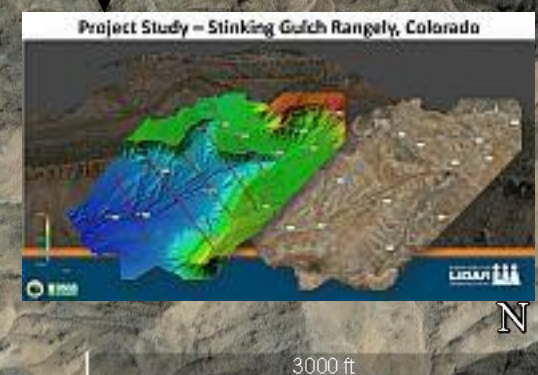
AgiSoft PhotoScan Licenses  
No one project can afford to purchase all needed Licenses. Available to all HPC users.

“Data Buddy” Toolbox  
Read SD card, Organize Files,  
Download UAS Dataflash  
Logs, Generate GPX paths  
Geotag Photos

(4) Front End Processors

Metadata Offline DB  
Phone, Tablet, Laptop  
ASC Toolbox?  
Like Wunderlist

USGS  
HPC Yeti  
(3) SGI  
Ultraviolet



President Obama Bust





# (Z) Weather and Data Together: A Portal to Coastal Fog Knowledge Generation

Torregrosa, Alicia

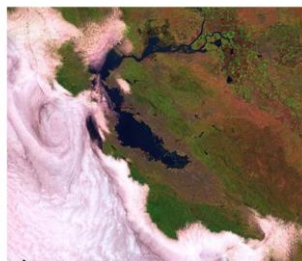
Ask questions on [slido.com](https://www.slido.com), #X615

# Weather and Data Together: A Portal for Coastal Fog Knowledge Generation

Alicia Torregrosa, [atorregrosa@usgs.gov](mailto:atorregrosa@usgs.gov)



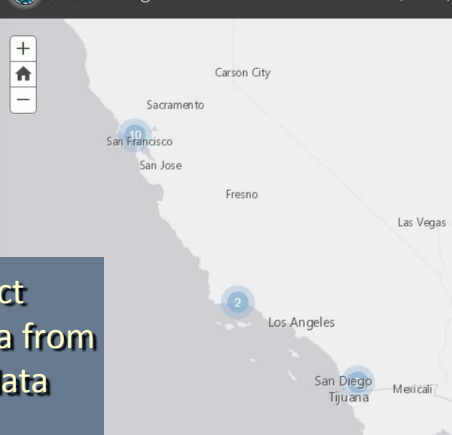
The Pacific Coastal Fog Project: Developing ecologically relevant fog datasets



Coastal marine fog is an important over California. A cloud—either stratus or what is known as fog—on the ground, complex interactions between ocean processes, vertical air forcing, and coastal mountain topography. The moisture in the air and over the ocean, as it moves from the ocean into the atmosphere of California.

In 2007 researchers realized that some 30% over the last century (data) of coastal managers working to protect California communities on the day of a warming of a result of climate change, fog is disappearing. Additional research was over time and explore implications for fog over to continue, many species and impacted. It became clear that steps to the biggest areas to help guide research however no easily accessible fog maps accessible, clearly real time satellite (via National Weather Service, the usage of and manipulate by most ecologists and to assist in gathering and making fog both professionals and the general public was started in early 2012. The project is California Landscape Conservation Co-

esri Fog Research: Network and Sites (FRNS)



Goal: Make it easier to extract synchronized coastal fog data from ground-based and satellite data repositories

Approach: NASA Earth Exchange to prepare and serve data; USGS fog website to access and understand data options and context



# (AA) Use of Automated Image Segmentation Algorithm for Improving Classification Workflows of High Resolution Imagery

Oliphant, Adam

Ask questions on [slido.com](https://www.slido.com), #X615

# Use of Automated Image Segmentation Algorithm for Improving Classification Workflows of High Resolution Imagery

Adam Oliphant<sup>1\*</sup>, James Tilton<sup>2\*\*</sup>, Thomas Gushue<sup>3</sup>, Nancy Hornewer<sup>4</sup>

<sup>1</sup> Western Geographic Science Center, <sup>2</sup> NASA Goddard Space Flight Center,

<sup>3</sup> Grand Canyon Monitoring Research Center, <sup>4</sup> Arizona Water Science Center, \* PI, \*\* Co-PI

Goal: make tool available to enable researchers to make better use of VHRI

- RHSeg (Recursive Hierarchical Image Segmentation)
- Evaluate non-commercial object segmentation tool on aerial imagery
- Test ability to segment sandbars and vegetation in Grand Canyon

## Outcomes

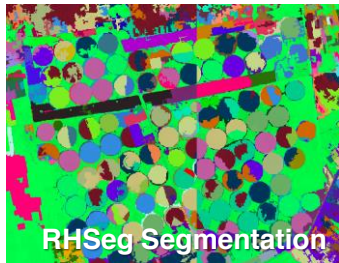
- Install RHSeg on USGS Nebula Cluster for researches open use
- Present on RHSeg at ESIP Summer Meeting
- Document methods and release products on GCMRC Geospatial Web Server



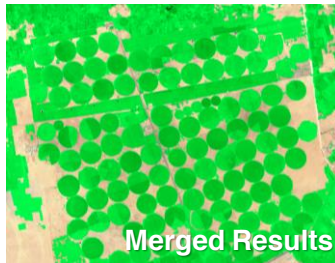
Google Imagery



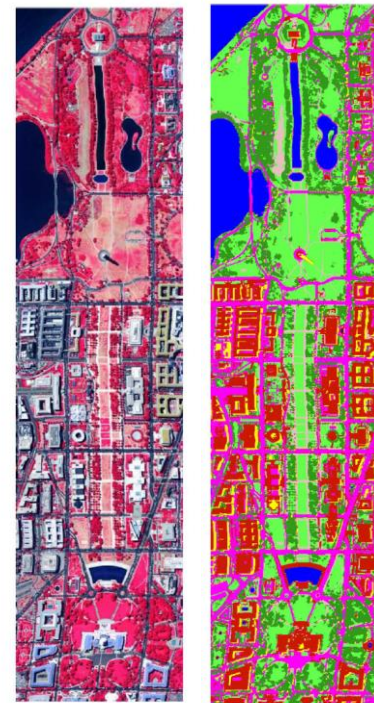
Pixel-based Classification



RHSeg Segmentation



Merged Results



(a)

(b)



Papers Utilizing RHSeg

doi: 10.3390/rs9101065

10.1109/TGRS.2012.2190079

# (AB) Publicly-Served Wildlife Disease Pathology Atlas Project

Knowles, Susan

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# Pathology Atlas

- Collaboration between National Wildlife Health Center (NWHC) and Web Informatics and Mapping (WIM)
- Primarily serves as a means for the NWHC to offer their repository of pathogen information and photos back to the public
- Built with partner submission in mind
- Built using the MEAN stack and hosted in AWS
- Benefits:
  - Supports the core mission of the bureau
  - CDI-specific - development artifacts

Lead PI: Susan Knowles - [sknowles@usgs.gov](mailto:sknowles@usgs.gov)  
Presenting: Hans Vraga (Co-PI)

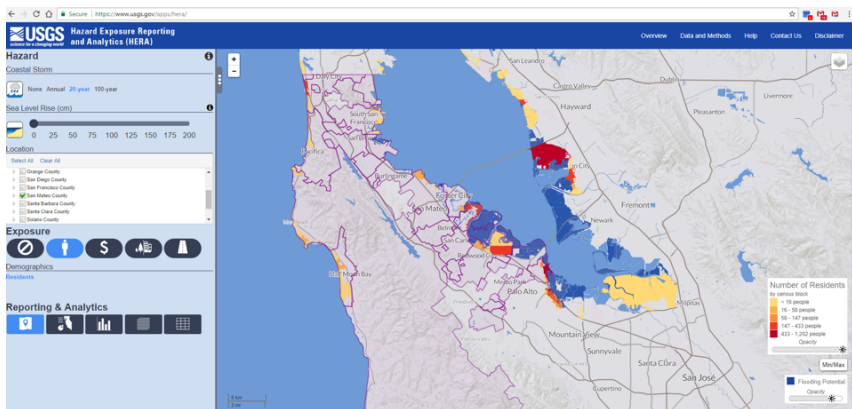
# **(AC) Integrating coastal hazards data and models on the semantic web: A proof-of-concept integrated modeling approach**

Bagstad, Kenneth

Ask questions on [slido.com](https://www.slido.com), #X615

# Integrating coastal hazards data on the semantic web

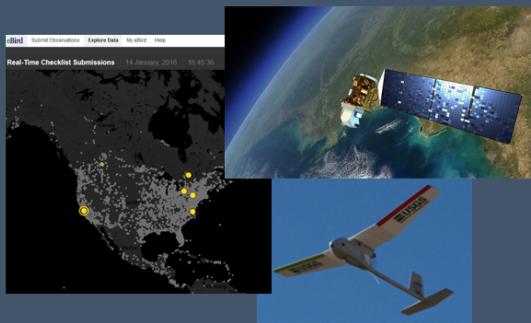
Ken Bagstad, [kjbagstad@usgs.gov](mailto:kjbagstad@usgs.gov)



## How to integrate:

- Fast-arriving,
- High-volume,
- Unstructured data

into our models?



## Components needed & ready

- Software & server architecture to **enable data & model integration**
- Semantics: **consistent, interdisciplinary terminology** to match data & models, reuse existing knowledge wherever appropriate
- Open-source, **collaborative, cloud-based, context-aware** modeling system using industry standards (W3C)



<http://www.integratedmodelling.org>  
More details on Feb. 14 CDI monthly call



# (AD) Ontology versioning for unambiguous interpretation of concepts in geoscience data

Varanka, Dalia

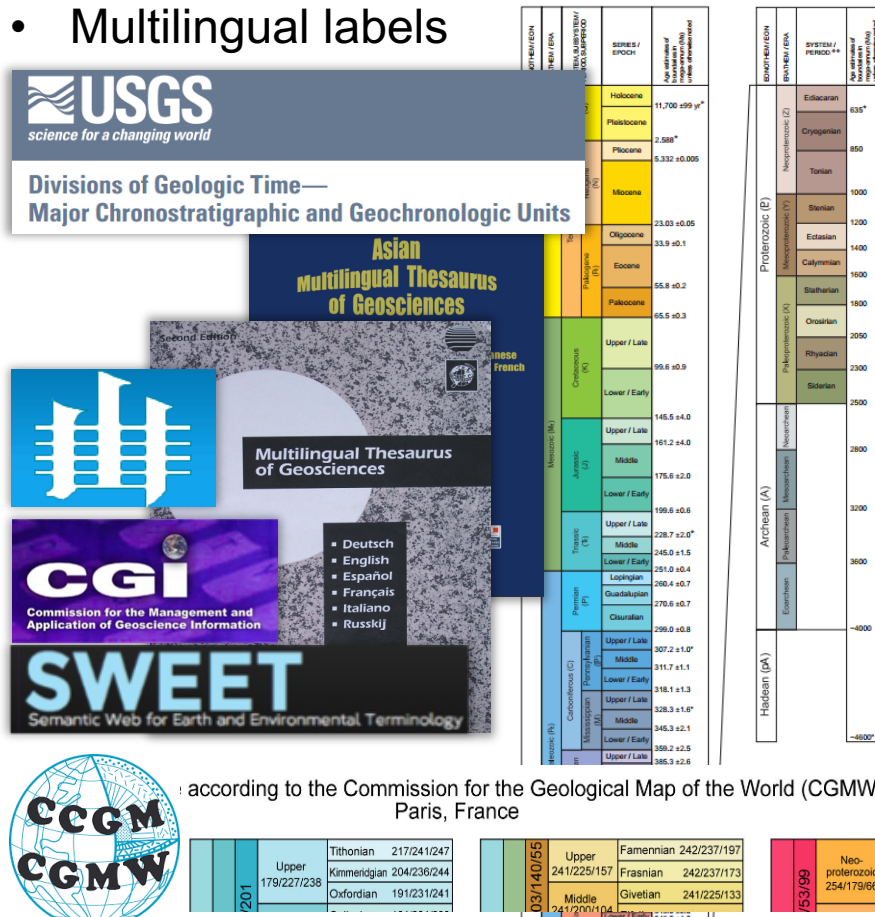
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# Ontology versioning for unambiguous interpretation of concepts in geoscience data

Dalia Varanka, CEGIS, USGS  
dvaranka@usgs.gov  
Xiaogang Ma, University of Idaho  
max@uidaho.edu

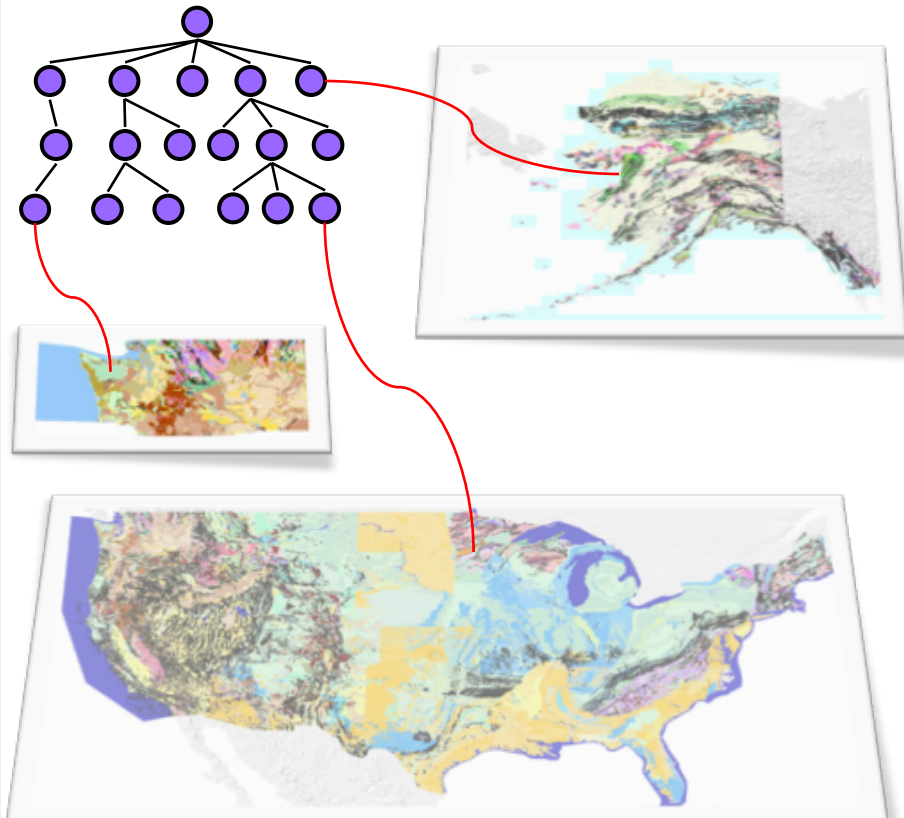
Heterogeneities in geologic time standard and data

- Schema versions
- Color spectrums
- Multilingual labels



Semantic Web and ontology versioning

- Complete versioning history
- Consistent identifier
- Correct concept meaning



# **(AE) Integrating Disparate Spatial Datasets from Local to National Scale for Open-Access Web-Based Visualization and Analysis: A Case Study Compiling U.S. Landslide Inventories**

Mirus, Benjamin

Ask questions on [slido.com](https://www.slido.com), #X615



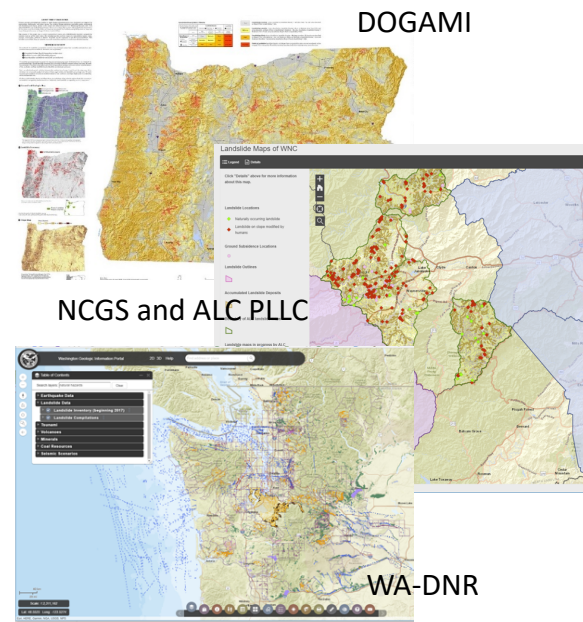
# Integrating Disparate Spatial Datasets from Local to National Scale for Open-Access Web-Based Visualization and Analysis: A Case Study Compiling U.S. Landslide Inventories

National-scale assessment of spatial patterns and trends requires efforts to integrate disparate local-scale data from various agencies

Little guidance or incentive for individual research to collaborate

Proposal leverages existing plans to support a basic repository for landslide inventories across the U.S. to develop:

- 1) Robust visualization and analysis tool of landslide occurrence
- 2) General guidance and framework for integrating and managing disparate spatial datasets for sustainable open-access tools



# (AF) National Alert Risk Mapper for Nonindigenous Aquatic Species

Fuller, Pam

Ask questions on [slido.com](https://www.slido.com), #X615

# National Alert Risk Mapper for Nonindigenous Aquatic Species

Pam Fuller  
pfuller@usgs.gov



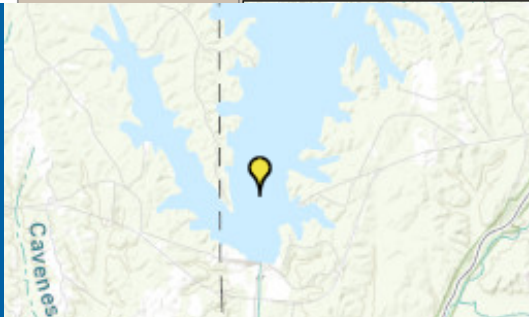
Specimen ID	1418769
Group	Fishes
Genus	Hypophthalmichthys
Species	molitrix
Common Name	Silver Carp
State	MS
County	Tishomingo
Locality	Bay Springs Lake, lower third
Mapping Accuracy	Approximate
HUC8 Name	Upper Tombigbee
HUC8 Number	3160101



**Silver Carp**

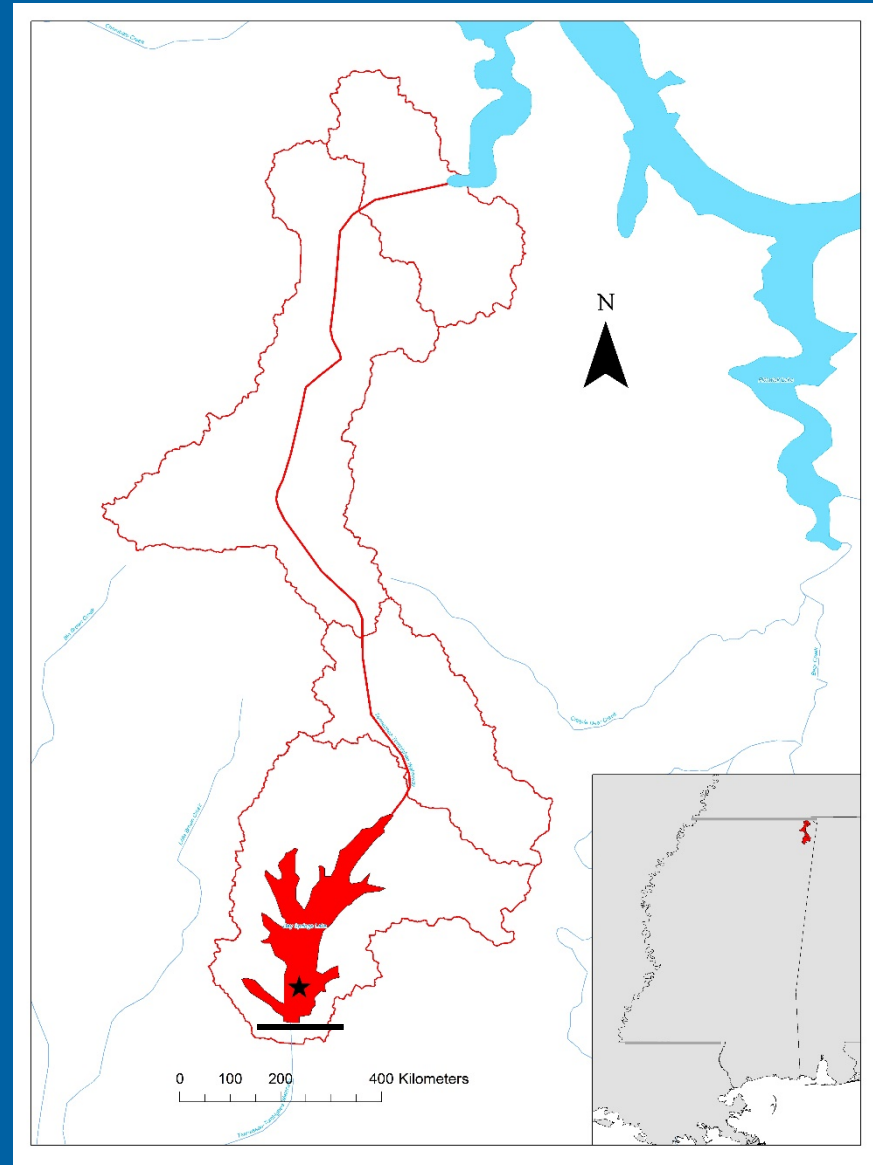
*Hypophthalmichthys molitrix*

**Red**  
waterbodies  
are at risk of  
invasion



CDI funding to:

- 1) Expand ARM to the entire contiguous US and Hawaii
- 2) Automate the map making process



## How to vote:

See instructions sent by email on Feb. 6 from “GS, CDI”

Email [cdi@usgs.gov](mailto:cdi@usgs.gov) with any questions.

Ask questions on [slido.com](https://www.slido.com), #X615